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EXAMINER	
CHANG, AUDREY Y	
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2872	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/772,752	WOONTNER, MARC O.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *7-10 and 12-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,11,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **September 8, 2010** has been entered.

2. This Office Action is in response to applicant's amendment on November 24, 2010, which has been entered into the file.

3. By this amendment, the applicant has amended claims 1-3, 5, 11, 15 and has newly added claim 16.

4. Claims 7-10 and 12-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention group, there being no allowable generic or linking claim. Election was made **without traverse** in the reply filed on May 9, 2005.

5. Claims 1-6, 11, and 15-16 remain pending in this application.

Claim Objections

6. **Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.** Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The feature concerning non-overlapping consecutive panel is embossed to diffract incoming light at the distinct predetermined antle has already been recited in its based claim (claims 1).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 5 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification fails to teach how to encode an angle with a number and to read the number by a reading device. The angle is an abstract object that is referred to the direction of the diffracted light. An abstract object cannot be "encoded" with a number or anything since there is no place or no physical body to encode any mark on it.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claims 1-3, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice (PN. 5,396,839).**

Rice teaches a multi-layer printing structure for forming an image, (please see Figures 1, 7, and 14 and columns 8-9) that is comprised of a plurality of panels (52, Figure 7 or 152, Figure 19, column 14, lines 49-52) including a plurality of ink dots (55, Figure 7) wherein the ink dots are forming of an embossable layer (55, in Figures 8-11, 115, in Figure 16, or 146, in Figure 18) and a printing stock. The printing stock (22) as shown in Figures 1 and 14, comprises a surface layer (23) and a stock (22), wherein

the stock (22) serves as the substrate. Rice teaches that the plurality of panels (52) is non-overlapping and is formed of consecutive panels, (please see Figure 7). Each panel includes an ink dot which therefore is tinted with one of the primary colors-red, green and blue, (please see Figure 7), which can be made to represent an intended color image (39). Rice further teaches that the ink dot of each panels can be embossed with a diffraction gratings selected from a plurality of different diffraction gratings (56, the designations of "8", "9" and "10" in Figure 7 referred to different embossed diffraction gratings as shown in Figures 8, 9 and 10), respectively, wherein each of the diffraction gratings is capable of diffracting and reflecting one of the primary colors, (please see column 8, lines 49-63). Rice teaches the diffraction gratings embossed on the embossable layer are capable of diffracting and reflecting red, blue or green colors. By arranging the individual diffraction gratings in certain combination, Rice further teaches that additive effect can be achieved so that by arranging different combinations of the embossed diffraction gratings in a panel, for instance with (55) embossed to separately diffract blue and red color would reflect the color magenta, (please see column 9, lines 30-43). Rice also teaches that the deformable ink (54) (for eventually forming the ink dots, please se column 9, lines 20-25) is applied to the printing plate (31) to create half-tone images, which become the composite image (48), where the ink may include various color such as yellow, magenta and cyan, (please see column 5, line 30-40). The ink (54) is then pressed onto surface layer (23) of the printing stock (22, Figure 1) together with the embossed diffraction gratings, to form the plurality of pixels or panels.

This reference has met all the limitations of the claims. With regard to the feature concerning each individual panel is to diffract incoming light at a predetermined reflection angle, Rice teaches explicitly that the diffraction gratings are embossed by using mold and the diffraction pattern on the mold is formed by holographic method, (please see column 10, lines 21-40). This means that the diffraction gratings are holographically configured. The diffraction gratings would diffract the incident light to form spectra of light. By viewing the spectra of light produced by the diffraction grating at different range of

angle different wavelengths or colors of light can be seen, (please see column 8, lines 49-54). This means that the diffraction grating would diffract different color of light at different range of angles, based on the fundamental theory of the diffraction grating. The diffraction gratings designed to diffract and reflect red color (R) would fundamentally have different **ranges** of the diffraction angles than the diffraction grating designed to diffract blue or green color of light. Since Rice does teach explicitly that according to the diffraction theory a diffraction grating **inherently** diffracts and reflects incoming light into beams of spectra, which means different color of light will be diffracted and observed at a different angle rang and the angle of diffraction and reflection of the incoming light for the diffraction grating is determined by the grating structures such as the pitches and orientations of the grating grooves, (please see column 8 line 59 to column 9, line 18), it would then have been obvious to one skilled in the art, if this is not already of the case for the structure of Rice, to design and make the panels to diffract different color of light with different diffraction angle and therefore the reflection angle for the benefit of allowing different color effect and decorative appearance be observed at different viewing angle.

Claims 1 and 11 have further been amended to include the phrase that at least three panels are tinted with different primary colors. Rice teaches as shown in Figure 7, at least three pixels or panels are tinted with different color such as red, blue or green, (i.e. R, G. B shown in Figure 7).

With regard to claim 3, the ink dots embossed with the same diffraction grating can be grouped together as the "panel".

With regard to claim 5, the scopes of the claim are not clear. It is not clear how does the diffraction angle is capable of encoding a number. It is true that the diffraction angle for different color of light will be different based on the diffraction theory.

The same reasons of rejection above are applied to claim 11.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice as applied to claim 1 above, and further in view of the patent issued to Mallik et al (PN. 5,085,514).

The multi-layer structure for forming an image taught by Rice as described for claim 1 above has met all the limitations of the claim. This reference however does not teach explicitly to include the claimed layers. Mallik et al in the same field of endeavor teaches a layer structure for making replication of embossed microstructure wherein the layer structure include a web (111, Figure 11) serves as the thermal stable layer, a strip coating (197) serves as the wear resistant layer, an embossable layer (199) with embossed microstructure, a reflective layer (201) for overlaying the embossable layer and an adhesive layer (203) which is heat activated to adhere the multi-layer structure to a substrate (205, Figure 12, please see column lines 23-40). It would then have been obvious to one skilled in the art to apply the teachings of the layer structure of Mallik et al to modify the multi-layer structure of Rice to provide wear-resistant protection as well as adhesive means to make the multi-layer structure with image formed easily attached to desired substrate agent.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice (PN. 5,396,839).

Rice teaches a material or structure for forming an image, (please see Figure 7, columns 8-9) that is comprised of a plurality of ink dots (55, Figure 7), serves as the a plurality of holographic pixels, (52) each dot is being embossed with a diffraction grating (56) that is capable of diffracting and reflecting incoming light in a predetermined diffraction angle, (please see Figure 7, columns 8-9). Rice teaches that the ink dots comprise ink (54) that includes one of the primary colors, (please see column 7, lines 45-50). Rice teaches that the ink dots having the embossed diffraction grating are applied to a printing stock (22, Figures 1, and 8-10), wherein the printing stock comprises a surface layer (23) and a stock (22), wherein

the stock (22) serves as the substrate. Rice teaches that at least two panels (52) are being tinted (using ink 54) with different primary colors such as red, green or blue, (R,G, B as shown in Figure 7). This reference does not teach explicitly that the primary colors are yellow-magenta-cyan, but since this is well known in the art to use RGB primary colors or YMC primary colors is considered to be obvious matters of design choices to one skilled in the art to design the printing material as desired.

Rice teaches explicitly that the diffraction gratings are embossed by using mold and the diffraction pattern on the mold is formed by holographic method, (please see column 10, lines 21-40). This means that the diffraction gratings are holographically configured and the pixels are holographic pixels.

Rice teaches that the diffraction grating is capable of diffracting and reflecting the incident light to produce spectra. The spectra of light is produced by diffraction of grating at different ranges of angles. This means different color of light can be viewed at different range of angles, (please see column 8, lines 49-63). This means the diffraction gratings for diffracting different primary color of light is diffracting the color light at different ranges of angles.

Claim 15 has been amended to include the phrase that all pixels tinted in the same color diffracting light at a distinct diffraction angle different for each primary color. Based on the fundamental diffraction theory stated above, the holographic pixels for different color do diffract the different color of light into different ranges of angles. Furthermore, since Rice does teach explicitly that the angle of diffraction and reflection of the incoming light for the diffraction grating is determined by the grating structures such as the pitches and orientations of the grating grooves, (please see column 8 line 59 to column 9, line 18), it would then have been obvious to one skilled in the art, if this is not already of the case for the structure of Rice, to design and make the panels to diffract different color of light with different diffraction angle and therefore the reflection angle for the benefit of allowing different color effect and decorative appearance be observed at different viewing angle.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice as applied to claim 1 above, and further in view of the patent issued to Moon et al (PN. 7,126,755).

The multi-layer printing structure for forming an image taught by Rice as described for claim 1 above has met all the limitations of the claims. Claim 5 has been amended to encode the diffraction angle. This feature has been rejected for lacking the enablement from the specification as set forth in the 35 USC 112, first paragraph rejection above. It is not possible to "encode" an angle with a number since angle is an abstract object. This feature therefore cannot be examined with details. However it is known in the art to label an object with an encoded information and reading the encoded information to identify the object, as explicitly taught by Moon et al. Moon et al teaches that an encoded element (8, Figure 4) can be placed on a physical body to be read by a reading device (please see Figure 2) to revel the coded information about the object. It would then have been obvious to one skilled in the art to apply the teachings of Moon et al to provide encoding information in the structure for the identification purpose.

14. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice as applied to claim 1 above, and further in view of the patent issued to Moon et al (PN. 7,126,755).

The multi-layer printing structure for forming an image taught by Rice as described for claim 1 above has met all the limitations of the claims. Claim 5 has been amended to encode the diffraction angle. This feature has been rejected for lacking the enablement from the specification as set forth in the 35 USC 112, first paragraph rejection above. It is not possible to "encode" an angle with a number since angle is an abstract object. This feature therefore cannot be examined with details. However it is known in the art to label an object with an encoded information and reading the encoded information to identify the object, as explicitly taught by Moon et al. Moon et al teaches that an encoded element (8, Figure 4)

can be placed on a physical body to be read by a reading device (please see Figure 2) to revel the coded information about the object. It would then have been obvious to one skilled in the art to apply the teachings of Moon et al to provide encoding information in the structure for the identification purpose.

Response to Arguments

15. Applicant's arguments filed on November 24, 2010 have been fully considered but they are not persuasive. The amended claims have been fully considered and have been rejected for the reasons stated above.

16. In response to applicant's arguments which states that the cited Rice reference is irrelevant to claims 1 and 11 of the instant application since the claimed invention of the instant application is not a resulting image, the examiner respectfully disagrees for the reasons stated below. The multilayer printing material taught by Rice that is having a plurality of panels each comprises an ink dot and embossed diffraction grating serves the same way as the multi-layer printing martial of the claims 1 and 11 as to form an image. The individual panel is not an resulting image but an unit panel to form an image just like the printing material is the basic unit to from an image. Whether the intended image has already formed or not the plurality of panels still serve the same way as the printing material **to from** an image. The non-overlapping consecutive arrangement of the plurality of panels of the instant application also consist an "image". When one has more than one such panels consecutively arranged it will represent an image. The applicant is respectfully noted that even printed paper with printed characteristics can be arranged in certain physical relationship to form an image. The issue concerning "to form an image" is really an intended use that does not differentiate the body of the claim concerning the actual multi-layer printing material from the prior art structure having the same physical structure. The argument concerning "different substrate" that is confusing since what does this mean in the claim?

17. Applicant is respectfully noted that the panels (51) having the ink dots having three primary colors are used to represent the color image (39, please see column 7, lines 49-52, column 8, line19-21).

Applicant's arguments concerning the "superimposed RGB" image are wrong. The applicant is respectfully noted that there is only one ink dot in each element (52, please see column 6, line 34) and adjoining element may form a pixel. There is no superimposed RGB image.

18. In response to applicant's arguments concerning the half tone image (39), applicant is respectfully referred to Figure 4 for the full color feature of the half tone image and the full color teachings disclosed in column 7, lines 45-52 and column 9, lines 19-38. The image (39) is not created from a negative obtained by photographing an actual image. This process is form forming the printing plate not form making the final printed image. The applicant has mistaken the process. The intended image (39) is represented by a plurality of panels with a plurality of ink dots and each ink dots is embossed with a diffraction grating. Each elements (52) of the panel unit serves as the multilayer printing material from forming an image the same way as the instant application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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